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“Why, If Things Are So Good, Are They So Bad?”

Magnitogorsk, Stalin’s Five-Year Plan, and American Engineers, 1928–1932

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During Stalin’s first Five-Year Plan (1928-32), both Soviet and Western workers came together to construct the Soviet Union’s greatest edifice at Magnitogorsk, a barren patch of Siberian steppe on the Asian side of the Ural Mountains. The workers journeyed to this place because of its geological anomaly: “a mountain of almost pure iron ore.”¹ The Magnetic Mountain was said to misdirect compass needles and affect other metal object. According to legend the mountain had already saved Russia once when the iron horseshoes of Genghis Khan’s invading hordes stuck fast to its charged surface. To Stalin, however, the Magnetic Mountain and the instant industrial city of Magnitogorsk was looked to “in hopes that it would help literally to materialize the radical dream of a new Russia – the Soviet Union – and eventually save it from invaders coming, this time, from the west.”² While to Stalin, Magnitogorsk served as the quintessential symbol of Soviet industrial triumph over capitalism, paradoxically, the city was largely constructed and maintained by the technical skills and resources of private American

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¹ Alan Smart, “Beyond Utopia: Representing Life in the Productivist City,” *Architecture and Culture* 3, no. 3 (2015): 297.

² Smart, 298.

engineering firms, reinforcing Stalin's dependency on the West that he claimed to be shedding in the Five-Year Plan.

The introduction of the first “frenzied”³ Five-Year Plan was accompanied by unprecedented changes to Soviet industry. By 1928, “Josef Stalin had won the struggle for power in the Union of Soviet Socialist Republics (USSR) against Trotsky. The fight for the leadership had followed the death, four years earlier, of the first Soviet leader, Lenin. Stalin was ready to initiate the next stage in the Soviet Union's development—massive economic expansion.”⁴ Perceiving Lenin as having overtaken the advanced capitalist countries politically by establishing the dictatorship of the proletariat,⁵ Stalin redirected his attention to socialist industry and collectivization. The first Five-Year Plan, announced in 1928, set industrial quotas for the approaching half-decade. Ambitiously, within a mere five years, coal was to double in production, steel production was to increase by 160% and electricity generation was to more than quadruple. The target for agricultural production was to increase by 55%.⁶

Straying from Lenin's New Economic Policy (NEP), successful labor and industry, to Stalin, could only be achieved through the triumph of the “socialist sector” over the “capitalist sector”:

Is it true that the central idea of the five-year plan in the *Soviet Country* is to increase the productivity of labour? No, it is not true. It is not *just any kind* of increase in the productivity of labour of the people that we need. What we need is a specific increase that will guarantee the *systematic supremacy of the socialist sector of the national*

³ Sarah Davies and James Harris, *Stalin's World: Dictating the Soviet Order* (New Haven: Yale University Press, 2014), 190.

⁴ Mark Rathbone, “Josef Stalin and the First Five-Year Plan,” *Hindsight* 15, no. 2 (2005): 14.

⁵ Josef Stalin, “Industrialization of the Country and the Right Deviation in the C.P.S.U.(B.)” (speech, Plenum of the C.C., C.P.S.U.(B.), November 19, 1928), quoted in *J. V. Stalin Works: Volume 11* (Moscow: Foreign Languages Publishing House, 1954), 260.

⁶ Rathbone, “Stalin and the First Five-Year Plan,” 14.

*economy over the capitalist sector. A five-year plan which overlooks this central idea not a five-year plan, but five-year rubbish.*⁷

Therefore, Stalin fundamentally sought to overcome the industrial and the economic core of Western Europe and America without exposing his nation to the same capitalist system, thus converting “the USSR from an agrarian and weak country, dependent upon capitalist countries, into an industrial and powerful country, fully self-reliant and independent of the caprices of world capitalism.”⁸ With the economic depression in full swing by 1929, Stalin further propagated that this “turning point” equated the downfall of the capitalist West and the upswing of socialist industry.⁹ So important was the prospect of the Five-Year Plan to Stalin that it applied “not only to the building of socialism. It [applied] also to upholding the independence of [the Soviet Union] in the circumstance of capitalist encirclement. The independence of [Stalin’s] country [could not] be upheld unless [he had] an adequate industrial basis for defense.”¹⁰ Stalin thus refuted the capitalist West in rhetoric and theory, pitting the Five-Year Plan as the means of both overcoming capitalist technological superiority and solidifying a modern socialist industrial foundation.

Nowhere was the euphoric sense of the revolution’s renewed possibility in the Five-Year Plan more evident than at Magnitogorsk.¹¹ Built in the sparsely inhabited Western Siberian steppe, the site was marked by a geological anomaly: “a mountain of almost pure iron.”¹² The

⁷ Josef Stalin, “The Right Deviation in the C.P.S.U.(B.)” (speech, Plenum of the Central Committee and Central Control Commission of the C.P.S.U.(B.), April 1929), quoted in *J. V. Stalin Works: Volume 12* (Moscow: Foreign Languages Publishing House, 1955), 84.

⁸ Josef Stalin, “Joint Plenum of the C.C. and C.C.C., C.P.S.U.(B.)” (speech, January 7-12, 1933), quoted in *J. V. Stalin Works: Volume 13* (Moscow: Foreign Languages Publishing House, 1995), 174.

⁹ Josef Stalin, “Political Report of the Central Committee to the Sixteenth Congress of the C.P.S.U.(B.)” (speech, June 27, 1930), quoted in *J. V. Stalin Works: Volume 12* (Moscow: Foreign Languages Publishing House, 1955), 242.

¹⁰ Josef Stalin, “Industrialization of the Country and the Right Deviation in the C.P.S.U.(B.),” 258.

¹¹ Stephen Kotkin, *Stalinism as Civilization* (Berkeley: University of California Press, 1995), 18.

¹² Smart, “Beyond Utopia,” 297.

Five-Year Plan birthed many other instant cities such as Komsomolsk-na Amure, Novokuznetsk and Karaganda. The Magnetic Mountain, however, “remained the quintessential emblem of the grand transformation,” encapsulating the building of socialism through the melding of science and society. Representing the Soviet working class, Magnitogorsk provided Stalin with the steel needed to propel the proletariat dictatorship onto the European technological and industrial mainstage.¹³ In addressing the party leadership on the twelfth anniversary of the October Revolution, Stalin declared that the Soviet Union was “advancing full steam ahead along the path of industrialization—to socialism,...becoming a country of metal.”¹⁴ Whether it be railways, tractors, automobiles, machinery, or weapons, nearly all industry of the Five-Year Plan, and consequently, the growth or stagnation of the Soviet Union, depended on Magnitogorsk metal.

Stalin placed great emphasis on the increased production of iron and steel. His objectives included the expansion and reconstruction of twenty prerevolutionary plants, and the construction of three new metallurgical megaprojects, Kuznetsk, Zaporozhe, and grandest of all, Magnitogorsk. Ironically, however, in 1929 the USSR did not possess the foundational “technology and expertise [needed] to jump start the socialist offensive,” having little choice but to reinforce its dependency on the capitalist West.¹⁵ Magnitogorsk, the symbolic and practical crux of Stalin’s Five-Year Plan, relied heavily on both the technical skills of Western engineers and their reservoir of scientific innovations to plan, construct and operate the instant city, enabling the rise of the Soviet working class not through socialist means but through Western intervention.

¹³ Kotkin, *Stalinism as Civilization*, 18.

¹⁴ Kotkin, 29.

¹⁵ Kotkin, 31.

At the onset of the first Five-Year Plan, Stalin's Russia was hardly conducive to metallurgical expansion. Many competent engineers had either been executed or left Russia, stripping the technical force of the Tsarist metallurgical equipment plants like Sormovo and Kramatorsk. The remaining engineers were in and out of OGPU (Joint State Political Directorate) camps. German engineers leading metallurgical plants were politically suspect. The "hastily trained red engineers," referred to as "Ninety-day wonders" (denoting their three-month training) by the Americans, showed little aptitude and were considered hazards and liabilities to the construction process.¹⁶ Moreover, iron ore extraction, the foundation of iron and steel production, technologically trailed Western or even Tsarist standards. While power shovels at open-pit iron ore operations, for example, were only introduced in 1929, the average shovel capacity remained small. In a 1953 study, researcher Nicholas W. Rodin details that in 1929, Uralrud (Urals Iron Ore Trust) possessed seventeen power shovels at 0.88 cubic meters on average. While Soviet shovels in 1942 averaged 1.73 cubic meters, Rodin points out that Lake Superior mines had 447 power shovels in 1924, averaging 2.5-3.0 cubic meters.¹⁷ Similarly, no new blast furnaces were constructed in the Soviet Union between 1917 and 1928, further impeding metallurgical expansion.

The implementation of foreign equipment, consequently, modernized and mechanized the Soviet metallurgical industry and Magnitogorsk beginning in 1928. In the onset of the Plan, Magnitogorsk was equipped with the largest current model of Traylor and Gates ore-crushers, vital in fragmenting raw material.¹⁸ Enlarged blast furnaces, built under R. W. Stuck of the McKee Corporation, were accompanied by turbo-blowers for hot-blast stoves, supplied by the

¹⁶ Antony Sutton, *Western Technology and Soviet Economic Development, 1930 to 1945* (Stanford: Hoover Institution Press, 1971), 62-63.

¹⁷ Nicholas W. Rodin, *Productivity in Soviet Iron Mining, 1890-1960* (Santa Monica: The RAND Corp., 1953), 2.

¹⁸ Sutton, *Western Technology and Soviet Economic Development*, 65.

Brown-Boveri Company of Switzerland. Hot blast, the preheating of air blown into a blast furnace, allows for higher furnace temperatures, thereby increasing the capacity of furnaces while reducing fuel consumption. While hot blast was one of the single greatest advancements of the Industrial Revolution, such a technique did not fully materialize in the Soviet Union without Western intervention. Moreover, fourteen open hearth-furnaces of 150 tons per heat were installed, equipped with either Morgan (American) or Demag (German) charging and pouring equipment. Additionally, with no modern standard blooming and slabbing mills (essential in breaking ingots into sizes more suitable for final rolling into various shapes) in the Soviet Union before 1932, Magnitogorsk was treated to a Demag 45-inch mill with General Electric control and drive equipment, produced abroad and installed by Demag and General Electric Engineers. With little modern metallurgical technology available within Soviet borders, foreign equipment became foundational to Magnitogorsk's industrial expansion.¹⁹

Foreign equipment was further complemented by foreign leadership. The technical skills of America's private engineers soon became the backbone of Magnitogorsk. Stalin placed great emphasis on Magnitogorsk iron and steel; between 1927 and 1932, however, iron and steel production in the USSR was not led by the proletariat but largely belonged to the newly Westernized *Giprometz* (State All-Union Institute for Planning of Metallurgical Works), the Freyn Engineering Company of Chicago, and later Cleveland's McKee and Company. In 1928 the Soviet Government brought on McKee and Company of Cleveland to model and engineer the Magnitogorsk plant, the largest project of the Five-Year Plan. This "showpiece of socialist construction," however, was modelled after America's preeminent steel mill in Gary, Indiana.²⁰ The latest innovations of rolling-mill technology and smelting, while fleeing to the "red

¹⁹ Sutton, 64-73.

²⁰ Sutton, 63.

engineers,” were made possible by their American counterparts.²¹ Further extending their role as mere consultants, American, and to a lesser extent German, engineers managed departments of the *Gipromez*, Westernizing its technical staff.²² As expressed by American engineer W.S. Orr:

When we first joined the Gipromez we were only asked questions-the Russians made the layouts, reports and decisions. In about six-months we were asked in on the layouts and decisions, in about nine months we were made Chief Engineers of the steel plant projects and at the end of the first year our men were heads of departments. Last year one was Assistant Chief Engineer of the entire bureau. Naturally we instituted American short-cut methods, weeding out a lot of unnecessary work and when we left Russia the *Gipromez* was the most efficient organization in Russia.²³

Magnitogorsk, Stalin’s denouement of the Five-Year Plan and the Nations’ industrial backbone, came to be largely “dependent on foreign design and engineering ability.”²⁴

Foreign leadership contended with party propagandists. R. W. Stuck of the McKee Corporation arrived at Magnitogorsk in late May of 1930, inheriting construction schedules focused on propaganda rather than engineering feasibility. The Communist Party, to propagate industrial progress, required the start-up of Blast Furnace No. 1 on January 31st of 1932. As the furnace was only 75% complete, Stuck remarked that “it was put into operation against our insistent demands not to do such a foolish and rash thing as the furnace was not ready and would be destroyed.”²⁵ Construction was further carried out according to pictorial rather than engineering objectives. According to Stuck, open-hearth stacks were built first, “as these were tall and made for a nice picture.”²⁶ *USSR in Construction*, a socialist realism journal published throughout the latter half of the Five-Year Plan supports Stuck’s accusations as a close

²¹ Sutton, 61.

²² *American Engineers in Russia*, manuscript collection in the Hoover Institution (Stanford University: TS Russia A551), collected by H. Fisher, folder 3, report 15, quoted in Antony Sutton, *Western Technology and Soviet Economic Development, 1930 to 1945* (Stanford: Hoover Institution Press, 1971), 63.

²³ *American Engineers in Russia*, 63.

²⁴ *American Engineers in Russia*, 64.

²⁵ *American Engineers in Russia*, 41.

²⁶ *American Engineers in Russia*, 42.

examination of the picturesque Magnitogorsk plant indicates the absence of many major components needed for functionality.²⁷ Shared hostility between American engineers and Soviet Party officials fostered an environment of competing and conflicting priorities in the same construction project.

Additionally, since the Soviets were lacking “entirely the technical resources to build even Tsarist-era metallurgical plants, quite apart from the highly complex systems contemplated,” private American engineering firms raised the iron and steel plants of Magnitogorsk with their reservoir of Western designs and blueprints.²⁸ American standardization of Magnitogorsk’s industrial equipment and building designs further saved Soviet resources. Similar to converting a military aircraft from the development stage into mass production by freezing the design at a particular point, in the case of Soviet industrial development “design was frozen on the most suitable of foreign designs.”²⁹ An amassed wealth of technological designs from decades of open market competition yielded the socialist city of Magnitogorsk to what John Scott, an American metal worker exposed to the plant’s engineering archives, described as “more than one hundred thousand blueprints.”³⁰ Saving the Soviets a fortune in time and money, Western blueprints, according to Sergei Koptewskii, standardized Magnitogorsk along Western technological lines. Everything from the blast furnace to machinery plants, cast-iron teeming equipment, single- and multi-stage electric gas purifiers, and rolling mills were standardized to emulate Western designs. Koptewskii, in estimating that 30,400 engineering designs were needed for the plant, expressed that without the ability to tap into the recorded decades of

²⁷ Timothy A. Nunan, “Soviet Nationalities Policy, *USSR in Construction*, and Soviet Documentary Photography in Comparative Context, 1931-1937,” *Ab Imperio* 2, no. 1 (2010): 47-50.

²⁸ Sutton, *Western Technology and Soviet Economic Development*, 61.

²⁹ Sutton, 64.

³⁰ John Scott, *Behind the Urals: An American Worker in Russia’s City of Steel* (Bloomington: Indiana University Press, 1973), 67.

Western industrial innovation, the drafting of Soviet blueprints from scratch would cost 16 million rubles and the added years needed to produce such drawings.³¹

Magnitogorsk, while seen by Stalin as emblematic of the triumph of Soviet industry in the first Five-Year Plan, did not exemplify socialist industrial triumph over capitalism, but paradoxically reinforced the Soviet Union's reliance on the technological advancement of the capitalist West. Quite unlike its magnetic effect on the horseshoes of the Mongols, the grand and historic endeavor of building socialism in Magnitogorsk, while in theory sought to surpass the industrial capacity and dependence on the West, in practice, invited them in.

About the author

Landen J. Kleisinger is a student of history major at the University of Regina. After graduation, he plans to pursue graduate study in Soviet technological history.

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³¹ Sergei Koptewskii, *The Cost of Construction of New Metallurgical Plants in the U.S.S.R.* (New York: East European Fund, Inc., 1952), 12.

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